1. **(Amended)** A vaccine composition for **[the prophylaxis or treatment of infection in]** administration to an animal, **[or bird by *Lawsonia intracellularis* or related microorganism, said vaccine composition]** comprising:

a **[an immunogenic,]** non-pathogenic form of *L. intracellularis* or related microorganism or an immunogenic component thereof; and

a pharmaceutically acceptable carrier **[one or more carriers, diluents and/or adjuvants suitable for veterinary or pharmaceutical use]**.

2. **(Amended)** The vaccine composition according to Claim 1, wherein the **[composition is for the prophylaxis or treatment of infection in pigs by *L. intracellularis* or related microorganism]** animal is a pig.

3. **(Amended)** The vaccine composition according to Claim 2, wherein the non-pathogenic form of *L. intracellularis* or related microorganism is an attenuated strain of the microorganism.

4. **(Amended)** The vaccine composition according to Claim 2, wherein the non-pathogenic form of *L. intracellularis* or related microorganism is a killed preparation of the microorganism.

5. **(Amended)** The vaccine composition according to Claim 4, wherein the **[non-pathogenic form of *L. intracellularis*]** killed preparation of the microorganism is a formalin-killed preparation of the microorganism.

6. **(Amended)** The vaccine composition according to Claim 1, **[or 2]** wherein said **[composition]** immunogenic component comprises a macromolecule selected from the group

consisting of a **[peptide,]** polypeptide, **[protein,]** a carbohydrate, a lipid **[or]** and a nucleic acid **[molecule or a combination thereof]** from *L. intracellularis* or related microorganism, said macromolecule being present in an amount effective to induce a protective immune response **[agent]** against *L. intracellularis* or related microorganism.

7. **(Amended)** The vaccine composition according to Claim 6, further comprising a **[wherein the composition comprises a peptide,]** polypeptide**[, protein or a derivative thereof]** from *L. intracellularis* or related microorganism.

8. **(Amended)** A vaccine composition according to Claim 7, wherein the **[peptide,]** polypeptide **[or protein is in recombinant form]** a recombinant polypeptide.

9. **(Amended)** The vaccine composition according to Claim 7, further comprising a compound selected from the group consisting of **[or 8 wherein the composition comprises]** a refolding/heatshock protein, a flagellar basal body rod protein, S-adenosylmethionine:tRNA ribosyltransferase-isomerase, autolysin, enoyl-(acyl-carrier-protein) reductase **[or]** and a glucarate transporter **[or derivative thereof]**.

10. **(Amended)** The vaccine composition according to Claim 9, wherein the polypeptide **[protein]** is GroEL having an amino acid sequence set forth in SEQ ID NO:2 or is a protein having at least about 40% similarity thereto.

11. **(Amended)** The vaccine composition according to Claim 9, wherein the polypeptide **[protein]** is GroES having an amino acid sequence set forth in SEQ ID NO:4 or is a protein having at least about 40% similarity thereto.

12. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:1 or a sequence having at least about 40% similarity thereto.

13. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:3 or a sequence having at least about 40% similarity thereto.

14. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:5 or a sequence having at least about 40% similarity thereto.

15. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:6 or a sequence having at least about 40% similarity thereto.

16. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:8 or a sequence having at least about 40% similarity thereto.

17. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:11 or a sequence having at least about 40% similarity thereto.

18. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:13 or a sequence having at least about 40% similarity thereto.

19. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:15 or a sequence having at least about 40% similarity thereto.

20. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:17 or a sequence having at least about 40% similarity thereto.

21. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:18 or a sequence having at least about 40% similarity thereto.

22. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:19 or a sequence having at least about 40% similarity thereto.

23. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:20 or a sequence having at least about 40% similarity thereto.

24. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:21 or a sequence having at least about 40% similarity thereto.

25. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** polypeptide **[or protein]** is encoded by a **[nucleotide sequence]** polynucleotide comprising SEQ ID NO:22 or a sequence having at least about 40% similarity thereto.

26. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** recombinant polypeptide **[or protein encoded by a nucleotide sequence comprising]** comprises the sequence of SEQ ID NO:7 or a sequence having at least about 40% similarity.

27. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** recombinant polypeptide **[or protein encoded by a nucleotide sequence comprising]** comprises the sequence of SEQ ID NO:9 or a sequence having at least about 40% similarity.

28. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** recombinant polypeptide **[or protein encoded by a nucleotide sequence comprising]** comprises the sequence of SEQ ID NO:10 or a sequence having at least about 40% similarity.

29. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** recombinant polypeptide **[or protein encoded by a nucleotide sequence comprising]** comprises the sequence of SEQ ID NO:12 or a sequence having at least about 40% similarity.

30. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** recombinant polypeptide **[or protein encoded by a nucleotide sequence comprising]** comprises the sequence of SEQ ID NO:14 or a sequence having at least about 40% similarity.

31. **(Amended)** A vaccine composition according to Claim 8, wherein the **[composition comprises a peptide,]** recombinant polypeptide **[or protein encoded by a nucleotide sequence comprising]** comprises the sequence of SEQ ID NO:16 or a sequence having at least about 40% similarity.

32. **(Amended)** A method for vaccinating an animal **[or bird]** against infection by *L. intracellularis* or related microorganism or treating an animal **[or bird]** infected by *L. intracellularis*, said method comprising the step of:

administering to said animal **[or bird]** an effective amount of a non-pathogenic form of *L. intracellularis* or related microorganism or an immunogenic component thereof for a time and under conditions sufficient to induce a protective immune response against *L. intracellularis* or related microorganism.

37. **(Amended)** A method according to Claim 32 **[and 33]** wherein said immunogenic component comprises a peptide, polypeptide, protein, carbohydrate, lipid or nucleic acid molecule or a combination thereof from *L. intracellularis* or related microorganism in an amount effective to induce a protective immune response against *L. intracellularis* or related microorganism.

40. **(Amended)** A method according to **[Claims 29 or 30]** Claim 32, wherein the immunogenic component is a refolding/heatshock protein, a flagellar basal body rod protein, S-adenosylmethionine: tRNA ribosyltransferase-isomerase, autolysin, enoyl-(acyl-carrier-protein) reductase or a glucarate transporter or derivative thereof.

77. **(Amended)** A genetic vaccine, comprising:

a polynucleotide encoding **[DNA sequence having a nucleotide sequence set forth in SEQ ID NO:1 or having at least 40% similarity thereto or is capable of hybridizing to SEQ ID NO:1 under low stringency conditions, said DNA sequence capable of expression in a pig to produce an amount of]** a **[peptide,]** polypeptide **[or protein]** in an amount